

V. REMARKS

Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as anticipated by Yanagimachi et al. (Japan 10-011799). The rejection is respectfully traversed.

Yanagimachi is directed to an optical recording medium. The optical recording medium includes a metallic reflective layer made of silver as a principal component. The metallic reflective layer is characterized by an average crystal grain diameter being in a range of 200 Å to 600 Å.

Claim 1 is directed to an optical recording medium that includes at least a recording layer comprising an organic dye, a reflecting layer composed of a metal and a protective layer laminated in this order on a light-transmittable substrate. Claim 1 recites that the reflecting layer is a thin film comprising silver as the major component and satisfies a relative intensity ratio of $I(200)/I(111) > 0.49$ when an X-ray diffraction intensity by a (111) plane is designated as $I(111)$ and an X-ray diffraction intensity by a (200) plane is designated as $I(200)$ in an X-ray diffraction spectrum measured by a θ - 2θ method while an angle of incidence with reference to a surface of the light-transmissible substrate is set at θ .

Claim 5 is directed to a method for producing an optical recording medium which includes at least a recording layer comprising an organic dye, a reflecting layer composed of a metal by a sputtering method and a protective layer laminated in this order on a light-transmissible substrate. Claim 5 recites that the method includes the step of forming a thin film comprising silver as the major component and satisfies a relative intensity ratio of $I(200)/I(111)$ is 0.49 or more when an X-ray diffraction intensity by a (111) plane is designated as $I(111)$ and an X-ray diffraction intensity by a (200) plane is designated as $I(200)$ in an X-ray diffraction spectrum measured by a θ - 2θ method while an angle of incidence with reference to a surface of the light-transmissible substrate is set at θ , by controlling a sputtering gas pressure in a sputtering chamber in forming the reflecting layer by the sputtering method.

In summary, Yanagimachi does not disclose the relative intensity ratio $I(200)/I(111)$. And, Yanagimachi only discloses 5mTorr (0.67Pa) of sputtering gas pressure. On the other hand, the present invention discloses the optical recording medium with a silver thin film having a relative intensity ratio $I(200)/I(111)$ being more than 0.49 which

is manufactured under the condition of 0.23 to 0.53Pa of sputtering gas pressure, lower than the disclosed sputtering gas pressure in Yanagimachi. As is clear from the above, Yanagimachi does not disclose the present claimed invention. Therefore, the present invention cannot be considered anticipated by Yanagimachi.

With regard to claim 1, it is respectfully submitted that the rejection is improper because the applied art fails to teach each element of claim 1. Specifically, the applied art fails to teach a reflecting layer of a thin film comprising silver as the major component that satisfies a relative intensity ratio of $I(200)/I(111) > 0.49$ when an X-ray diffraction intensity by a (111) plane is designated as $I(111)$ and an X-ray diffraction intensity by a (200) plane is designated as $I(200)$ in an X-ray diffraction spectrum measured by a θ - 2θ method while an angle of incidence with reference to a surface of the light-transmissible substrate is set at θ . Thus, it is respectfully submitted that claim 1 is allowable over the applied art.

With regard to claim 5, it is respectfully submitted that the rejection is improper because the applied art fails to teach each element of claim 5. Specifically, the applied art fails to teach a reflecting layer of a thin film comprising silver as the major component that satisfies a relative intensity ratio of $I(200)/I(111)$ is 0.49 or more when an X-ray diffraction intensity by a (111) plane is designated as $I(111)$ and an X-ray diffraction intensity by a (200) plane is designated as $I(200)$ in an X-ray diffraction spectrum measured by a θ - 2θ method while an angle of incidence with reference to a surface of the light-transmissible substrate is set at θ . Thus, it is respectfully submitted that claim 5 is allowable over the applied art.

Withdrawal of the rejection is respectfully requested.

Claims 1, 4 and 5 are rejected under 35 U.S.C. 103(a) as unpatentable over Yanagimachi et al. (Japan 10-011799). The rejection is respectfully traversed.

As suggested above, the present invention claims optical recording medium comprising a reflecting layer (i.e. thin film comprising silver as a major component) having the relative intensity ratio $I(200)/I(111)$ being more than 0.49. However, Yanagimachi never teaches or suggests the relative intensity ratio $I(200)/I(111)$ of the silver thin film of the optical recording medium.

As a result, it is respectfully submitted that none of the applied art, alone or in combination, teaches or suggests the features of claims 1 and 5, as mentioned above. Thus, it is respectfully submitted that one of ordinary skill in the art would not be motivated to combine the features of the applied art because such combination would not result in the claimed inventions recited in claims 1 and 5. As a result, it is respectfully submitted that claims 1 and 5 are allowable over the applied art.

Claim 4 depends from claim 1 and includes all of the features of claim 1. Thus, it is respectfully submitted that claim 4 is allowable at least for the reason claim 1 is allowable as well as for the features it recites.

Withdrawal of the rejection is respectfully requested.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as unpatentable over Usami et al. (U.S. Patent No. 6,341,122) in view of Yanagimachi. The rejection is respectfully traversed.

As mentioned above, the present invention claims optical recording medium comprising a reflecting layer (i.e. thin film comprising silver as a major component) having the relative intensity ratio $I(200) / I(111)$ being more than 0.49. However, Yanagimachi does not teach or suggest the relative intensity ratio $I(200) / I(111)$ of the silver thin film of the optical recording medium.

Secondly, as discussed in the previous response dated March 17, 2003, the present specification describes the correlation between the sputtering gas pressure and the relative intensity ratio, namely, the lower the sputtering gas pressure is set, the higher the intensity ratio of the silver thin film obtained is.

Further, the present specification describes the relationship among the sputtering gas pressure, the relative intensity ratio, the density of film construction of the silver thin layer, and the high-temperature high-humidity resistance characteristics of the optical recording medium. From the description, there is a remarkable effect that the relative intensity ratio of more than 0.49 brings the optical recording medium with more excellent characteristics of high-temperature high-humidity resistance.

Therefore, the present invention would not be obvious over Usami in view of Yanagimachi.

Usami teaches an optical information recording medium that includes a transparent disk substrate, a recording dye layer and a light-reflecting layer arranged in this order. The transparent disk substrate is provided with a spiral pregroove. The recording dye layer is placed in the pregroove on which information is recorded by irradiation with a laser beam. The pregroove is formed in an area between an inner circle having a radius corresponding to a half of a radius of the disk substrate and an outer circle having a radius corresponding to 19/20 of the radius of the disk substrate.

It is respectfully submitted that none of the applied art, alone or in combination, teaches or suggests the features of claims 1 and 5 recited above. Thus, it is respectfully submitted that one of ordinary skill in the art would not be motivated to combine the features of the applied art because such combination would not result in the claimed invention. Thus, it is respectfully submitted that the features of claims 1 and 5 discussed above are allowable over the applied art.

Claims 2-4 depend from claim 1 and include all of the features of claim 1. Thus, it is respectfully submitted that the dependent claims are allowable at least for the reasons claim 1 is allowable as well as for the features they recite.

Withdrawal of the rejection is respectfully requested.

Claims 1, 4, 5 and 6 are rejected under 35 U.S.C. 103(a) as unpatentable over Japan 799 in view of Nee (U.S. Patent No. 6,451,402). The rejection is respectfully traversed.

As discussed above, Yanagimachi does not teach or suggest the relative intensity ratio. Further, Nee also does not teach or suggest the relative intensity ratio. Therefore, one of ordinary skill in the art would not be motivated to combine Yanagimachi and Nee to arrive at the present invention.

Furthermore, Nee discloses a pressure of 1 to 3mTorr (0.13 to 0.39Pa) for manufacturing the reflecting layer of silver alloy. However, the present inventor emphasizes that the characteristics of the surface of the reflecting layer is highly dependent on the manufacturing apparatus. Therefore, Nee does not obtain the optical recording medium as claimed in the present invention.

Consequently, the present invention would not be obvious over Yanagimachi in view of Nee.

Nee teaches metal alloys for the reflective or the semi-reflective layer of an optical storage medium. The optical storage medium includes a first layer, a semi-reflective coating, a second layer, a reflective coating and a space layer. The first layer has a first pattern of features in at least one major surface. The semi-reflective coating is adjacent the first feature pattern and includes a first metal alloys. The second layer has a second pattern of features in at least one major surface. The reflective coating is adjacent the second feature pattern and includes a second metal alloy. The space layer is located between the first and second layers. The first and second metal alloys include silver and gold wherein the relationship between the amounts of silver and gold is defined by Ag_xAu_y , where $0.9 < x < 0.999$ and $0.001 < y < 0.10$.

It is respectfully submitted that none of the applied art, alone or in combination, teaches or suggests the features of claims 1 and 5 recited above. Thus, one of ordinary skill in the art would not be motivated to combine the features of the applied art because such combination would not result in the claimed invention. Thus, it is respectfully submitted that the features of claims 1 and 5 discussed above are allowable over the applied art.

Claim 6 is directed to a method for producing an optical recording medium which includes at least a recording layer comprising an organic dye, a reflecting layer composed of a metal by a sputtering method and a protective layer laminated in this order on a light-transmissible substrate. Claim 6 recites that the method includes the step of forming a thin film comprising silver as the major component and satisfies a relative intensity ratio of $I(200)/I(111) > 0.47$ when an X-ray diffraction intensity by a (111) plane is designated as $I(111)$ and an X-ray diffraction intensity by a (200) plane is designated as $I(200)$ in an X-ray diffraction spectrum measured by a θ - 2θ method while an angle of incidence with reference to a surface of the light-transmissible substrate is set at θ , by controlling a sputtering gas pressure in a sputtering chamber in forming the reflecting layer by the sputtering method, wherein the sputtering gas pressure in the sputtering chamber is set within a range from 0.23 to 0.53 Pa.

It is respectfully submitted that none of the applied art, alone or in combination, teaches or suggests the features of claim 6. In particular, none of the applied art, alone or in combination, teaches or suggests a step of forming a thin film comprising silver

that satisfies a relative intensity ratio of $I(200)/I(111) > 0.47$ when an X-ray diffraction intensity by a (111) plane is designated as $I(111)$ and an X-ray diffraction intensity by a (200) plane is designated as $I(200)$ in an X-ray diffraction spectrum measured by a θ - 2θ method while an angle of incidence with reference to a surface of the light-transmissible substrate is set at θ , by controlling a sputtering gas pressure in a sputtering chamber in forming the reflecting layer by the sputtering method, with the sputtering gas pressure in the sputtering chamber set within a range from 0.23 to 0.53 Pa. Thus, it is respectfully submitted that one of ordinary skill in the art would not be motivated to combine the features of the applied art because such combination would not result in the claimed inventions recited in claim 6. As a result, it is respectfully submitted that claim 6 is allowable over the applied art.

Claim 4 depends from claim 1 and includes all of the features of claim 1. Thus, it is respectfully submitted that the dependent claim is allowable at least for the reasons claim 1 is allowable as well as for the features they recite.

Withdrawal of the rejection is respectfully requested.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as unpatentable over Usami in view of Yanagimachi and Nee.

For the reasons discussed above, it is respectfully submitted that none of the applied art, alone or in combination, teaches or suggests the features of claims 1, 5 and 6 as recited above. As already mentioned above, the applied art does not teach specific features recited in claims 1, 5 and 6. Thus, one of ordinary skill in the art would not be motivated to combine the teachings of the applied art because such combination would not result in the claimed invention. As a result, it is respectfully submitted that claims 1, 5 and 6 are allowable over the applied art.

Claims 2-4 depend from claim 1 and include all of the features of claim 1. Thus, it is respectfully submitted that the dependent claims are allowable at least for the reasons claim 1 is allowable as well as for the features they recite.

Withdrawal of the rejection is respectfully requested.

In view of the foregoing, reconsideration of the application and allowance of the pending claims are respectfully requested. Should the Examiner believe anything further is desirable in order to place the application in even better condition for

allowance, the Examiner is invited to contact Applicants' representative at the telephone number listed below.

Should additional fees be necessary in connection with the filing of this paper or if a Petition for Extension of Time is required for timely acceptance of the same, the Commissioner is hereby authorized to charge Deposit Account No. 18-0013 for any such fees and Applicant(s) hereby petition for such extension of time.

Respectfully submitted,

Date: September 3, 2003

By: 

David T. Nikaido
Reg. No. 22,663

Carl Schaukowitch
Reg. No. 29,211

RADER, FISHMAN & GRAUER PLLC
1233 20th Street, N.W. Suite 501
Washington, D.C. 20036
Tel: (202) 955-3750
Fax: (202) 955-3751
Customer No. 23353

Enclosure(s): Petition for Extension of Time (two months)

DC131778